



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 9

75 Hawthorne Street
San Francisco, CA 94105-3901**PROGRESS ON PERCHLORATE TOXICITY ASSESSMENT AND REGULATION**
December 2002**FEDERAL ACTIONS****Scientific Assessment - Toxicology**

EPA is on schedule to finalize the science-based assessment of perchlorate toxicity by Spring, 2003. In March, 2002, EPA sponsored a scientific peer review of the draft toxicity assessment for perchlorate. In a public meeting in Sacramento, the 17 non-EPA scientists critiqued EPA's estimate of a safe level for perchlorate equivalent to **1 ppb** in drinking water. Their report was published on EPA's website in June and was generally supportive of EPA's approach. EPA considered the comments of the panel and the public in preparation of a final draft, planned for internal-EPA review in early 2003 with a public release in the Spring of 2003.

Health Advisory for Drinking Water

The next step is expected to be a Health Advisory from EPA's Office of Water within a year of the final toxicity assessment. The Office of Water interprets the Toxicity Assessment to determine a concentration that would be health-protective in public water supply. Although neither the Toxicity Assessment nor the Health Advisory are enforceable standards, they provide a solid nationwide basis for management decisions at federal and non-federal sites.

Enforceable Drinking Water Standard

An enforceable drinking water standard for perchlorate involves several years of public and scientific review of the many factors involved in establishing a federal regulation. Much of the information gathering has already begun, including adding perchlorate to the nationwide Unregulated Contaminant Monitoring Rule to estimate the extent of perchlorate contamination in the nation's water supply. EPA has not yet made a decision to proceed with a formal drinking water standard.

Site Specific Standards

EPA has established formal enforceable levels for perchlorate cleanup at **4 ppb** or less on a site-specific basis at three Superfund sites, including two in California.

CALIFORNIA and OTHER STATES**Public Health Goal, a Scientific Assessment**

In September, 2002, the Governor of California signed legislation requiring California EPA to establish a science-based Public Health Goal (PHG) for perchlorate in drinking water. Cal EPA published a draft PHG of **6 ppb** in March 2002, and a revised draft recommending a range of **2 to 6 ppb** was released in November, 2002. Cal EPA is primarily relying on a human clinical study while U.S. EPA uses both human and tightly-controlled lab animal studies.

A successful lawsuit by Kerr-McGee and Lockheed Martin resulted in a ruling requiring another peer review. The state estimates that their PHG could be final in June 2003, approximately six months later than the legislative schedule.

The California PHG is specific to drinking water, compared to the federal process in which the toxicology is assessed by scientists in the Office of Research and Development and a drinking water concentration is calculated by the Office of Water.

Enforceable Drinking Water Standard

California will be the first state with an enforceable regulatory standard for perchlorate. The legislation mandating the PHG also required the adoption of a primary drinking water standard by California Department of Health Services. The primary drinking water standard may also be delayed from the January, 2004, date set by the legislature. California currently has a non-enforceable Action Level of **4 ppb**.

Other States and Tribes

States, Tribes and local agencies are using draft toxicity assessments to make management decisions. Eight states have some perchlorate advisory level ranging from **1 ppb** (MA, MD, NM) to **18 ppb** (NV). Some California Tribal governments have considered levels **below 1 ppb**, due to significant tribal thyroid health problems.



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SITE OVERVIEWS

December, 2002

Aerojet General Corp. Superfund Site - Rancho Cordova, CA (EPA lead under Superfund)

The Aerojet Superfund site is a 5,500 acre rocket manufacturing site near Sacramento, California. Soils and groundwater at the site are contaminated with volatile organic compounds such as trichloroethylene (TCE) and rocket propulsion components including perchlorate. In the early 1990's, detection of part-per-million levels of perchlorate in a drinking water supply aquifer led EPA's Superfund team to request the country's first evaluation of perchlorate's toxicity. The first large-scale perchlorate treatment process in the U.S. was developed and implemented at the Aerojet site in 1998. This biological system treats more than five million gallons of contaminated groundwater each day and reduces perchlorate concentrations from 5,000 ppb to less than 4 ppb. In the July, 2001 Record of Decision for the Aerojet site, EPA set the nation's first enforceable site-specific cleanup standard for perchlorate at 4 ppb. EPA's August, 2002 Unilateral Administrative Order requires Aerojet General to design, build and operate a groundwater extraction and treatment system to contain and clean up groundwater contamination in the western portion of the Aerojet site. The order also requires Aerojet to provide replacement water for wells lost due to contamination.

San Gabriel Valley Superfund Sites (EPA lead under Superfund)

At the San Gabriel Valley Superfund Sites, perchlorate has been detected in at least 23 water supply wells. Most of the contaminated wells are located in the Azusa/Baldwin Park area, where the testing and manufacture of solid-fuel rockets in the 1940s and 1950s is believed to be the primary source of the contamination. The first perchlorate treatment system was completed in March 2001, making use of ion exchange technology. The treatment system is cleaning up the groundwater and supplying drinking water to approximately 9,000 San Gabriel Valley residents. Two additional perchlorate treatment systems are in construction, and are expected to begin operation by mid-2003. When the fourth and last system is completed in late 2003 or 2004, the four perchlorate treatment systems, estimated to cost more than \$17 million to install and roughly \$5 million per year to operate, will supply drinking water to more than 100,000 San Gabriel Valley residents. Over the next 15 years, we expect that more than \$200 million will be spent on cleanup of perchlorate and other groundwater contaminants at the Baldwin Park site alone. The costs are being paid by a group of Potentially Responsible Parties and Federal appropriations earmarked for San Gabriel Valley cleanup.

In the El Monte and Puente Valley areas of the San Gabriel Valley, the majority of the perchlorate is found at low levels in shallow groundwater. In the South El Monte area, three drinking water wells have been closed due to perchlorate and we are working with the PRPs to address the problem as part of their cleanup actions.

Rialto-Colton Area (California lead)

In the Rialto-Colton area, perchlorate has been detected in more than 20 water supply wells at concentrations above the California action level of 4 ppb. The loss of these wells may create a serious water supply shortage for the four affected water companies by the summer of 2003. The State of California Regional Water Quality Control Board has issued investigation orders to eight current or former facilities in the area suspected of testing, manufacturing, storing, or disposing of perchlorate-containing materials; is directing and overseeing initial soil and groundwater testing; and is providing \$3 million to help the four affected water companies purchase water treatment equipment. One of the eight companies targeted by the Regional Board has been negotiating with the affected water companies over the provision of additional funds to help purchase water treatment equipment.

EPA is working with our State agency counterparts and the affected water agencies to get the Department of Defense to investigate "Formerly Used Defense Sites" in the area, to identify other Potentially Responsible Parties (PRPs), to find monies that may be available to help pay for water treatment systems, and to evaluate the case that can be made against PRPs in the event that EPA concludes that federal enforcement action is appropriate.



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Perchlorate in Henderson, NV - Significant Controls Are Operating December 2002

Source and Problem Description

*Kerr McGee Chemical Company (KMCC) - perchlorate releases began in 1940s; prior to controls, KMCC plume released about 900 pounds per day (average) to Las Vegas Wash (LVW)

*Perchlorate contaminated ground water from Kerr McGee plume flows about 3 miles from KMCC to Las Vegas Wash. KMCC is the most significant source of perchlorate entering LVW.

Kerr McGee Control Strategy and Status

*Control Strategy: capture and treat perchlorate at three locations

- 1) on KMCC property where perchlorate is most concentrated,
- 2) at Athens Road about midway between KMCC and LVW where there is a narrow subsurface channel that makes effective capture possible, and
- 3) near LVW where capture will have the most immediate impact on reducing releases to LVW

*Current Status

- 1) on KMCC property - **source control achieved**; slurry wall (1700 feet long & 60 feet deep) and 22 extraction wells capture about 99% of mass flow (890 lbs/day)
- 2) Athens Road, 8 extraction wells capture an estimated 90-95% of mass flow (810 to 860 lbs/day), and
- 3) near LVW - seep and 4 extraction wells capture an estimated 50-60% of mass flow (450-550 lbs/day)

*Water Treatment - total of 850 gpm of water captured from the three locations is treated using 15 ion exchange units. The units are 99+% efficient; the treated water contains 0.5 to 2.0 ppm perchlorate and is discharged back to LVW. [1 ppm equates to 10 pounds per day to LVW].

*Summary - engineered controls are in place and **removing 2150-2300 pounds, more than 1 ton per day**, of perchlorate from the Kerr McGee plume that flows towards Las Vegas Wash.

Remaining Issues

*Las Vegas Wash Gravels - There is a reservoir of perchlorate in the gravels underlying Las Vegas Wash and beyond KMCC's last capture point; this perchlorate surfaces into LVW within 2 miles downstream of the seep capture area; it adds about 200-500 pounds per day to LVW.

*There Could Be Other Small Sources of Perchlorate - Need to investigate the existence and significance of additional sources of perchlorate downstream of the seep area.

Next Steps

*NDEP to investigate Las Vegas Wash Gravels and possibility of other small sources of perchlorate using federal grant dollars; work to begin in early 2003.

*Ensure that KMCC operates existing controls at maximum efficiency.

*Investigate feasibility of capturing and treating perchlorate in Las Vegas Wash Gravels.

*Evaluate results of Pepcon pilot scale in-situ bioremediation plant, and develop strategy to intercept and treat this perchlorate plume before it reaches Las Vegas Wash.

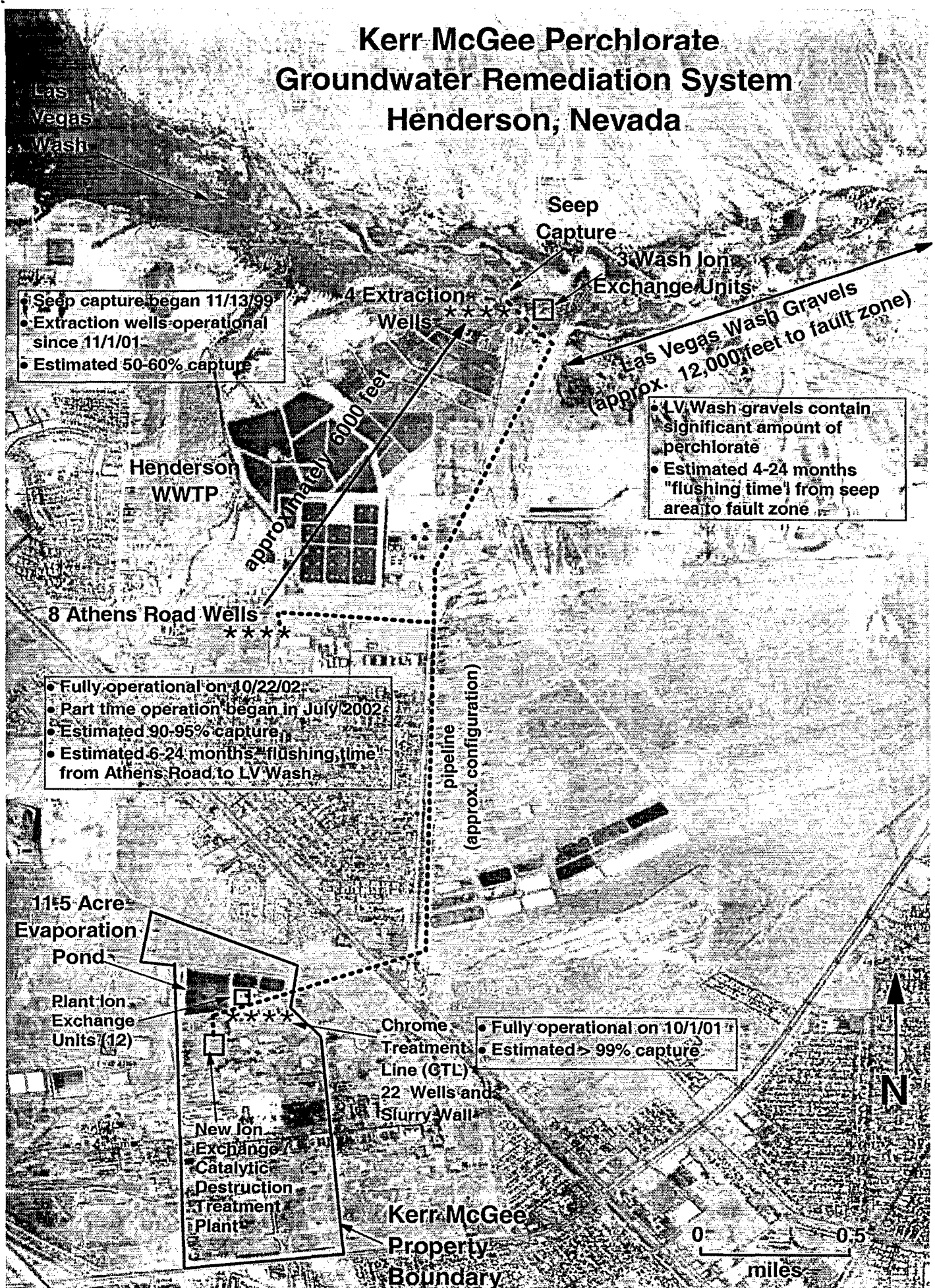
Estimated Travel Times and Flushing Times

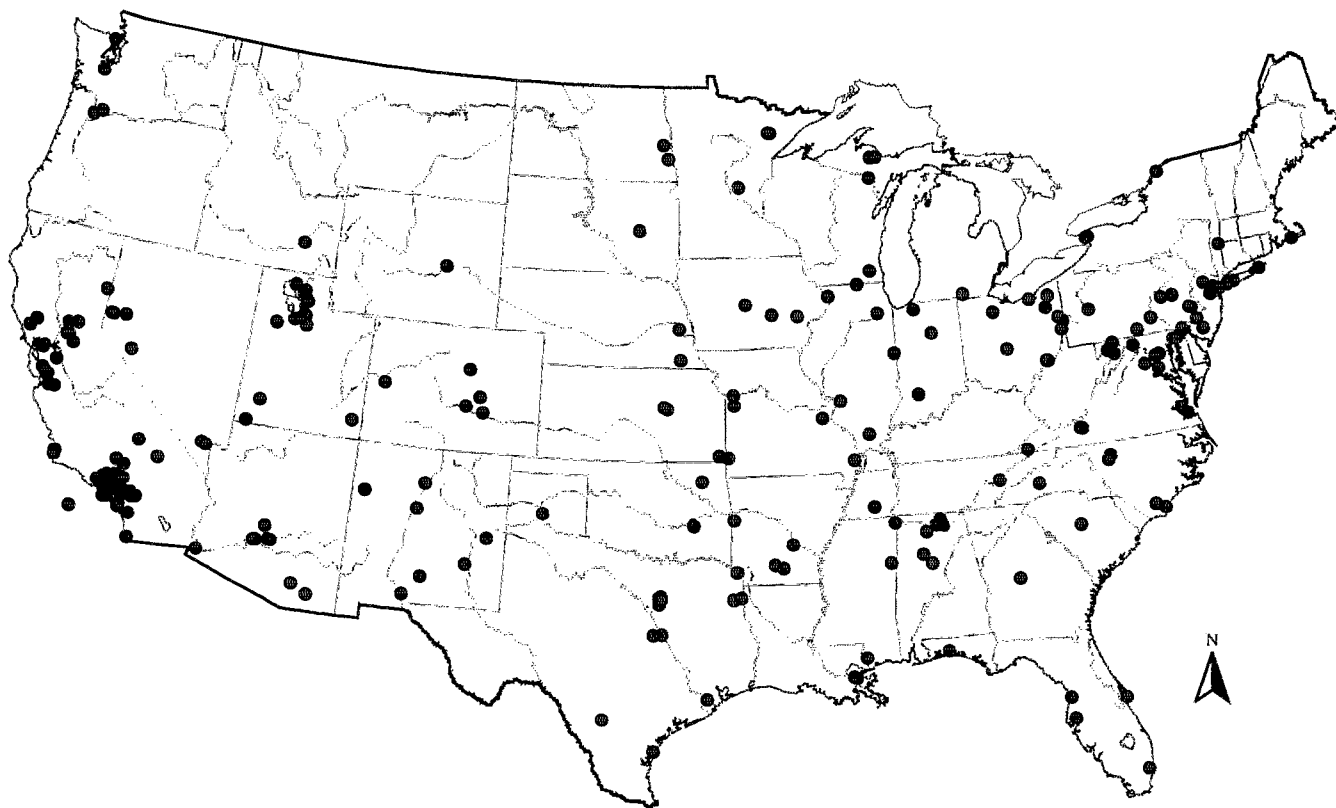
It takes time for ground water to travel from one capture point to the next (travel time). Even after a source of perchlorate is reduced or eliminated, it takes time for clean water to flush out the contaminated ground water (flushing time).

*Athens Road to Las Vegas Wash - travel time is 6 months; flushing time to reach 1 ppm is 6 to 24 months (1 to 4 travel times)

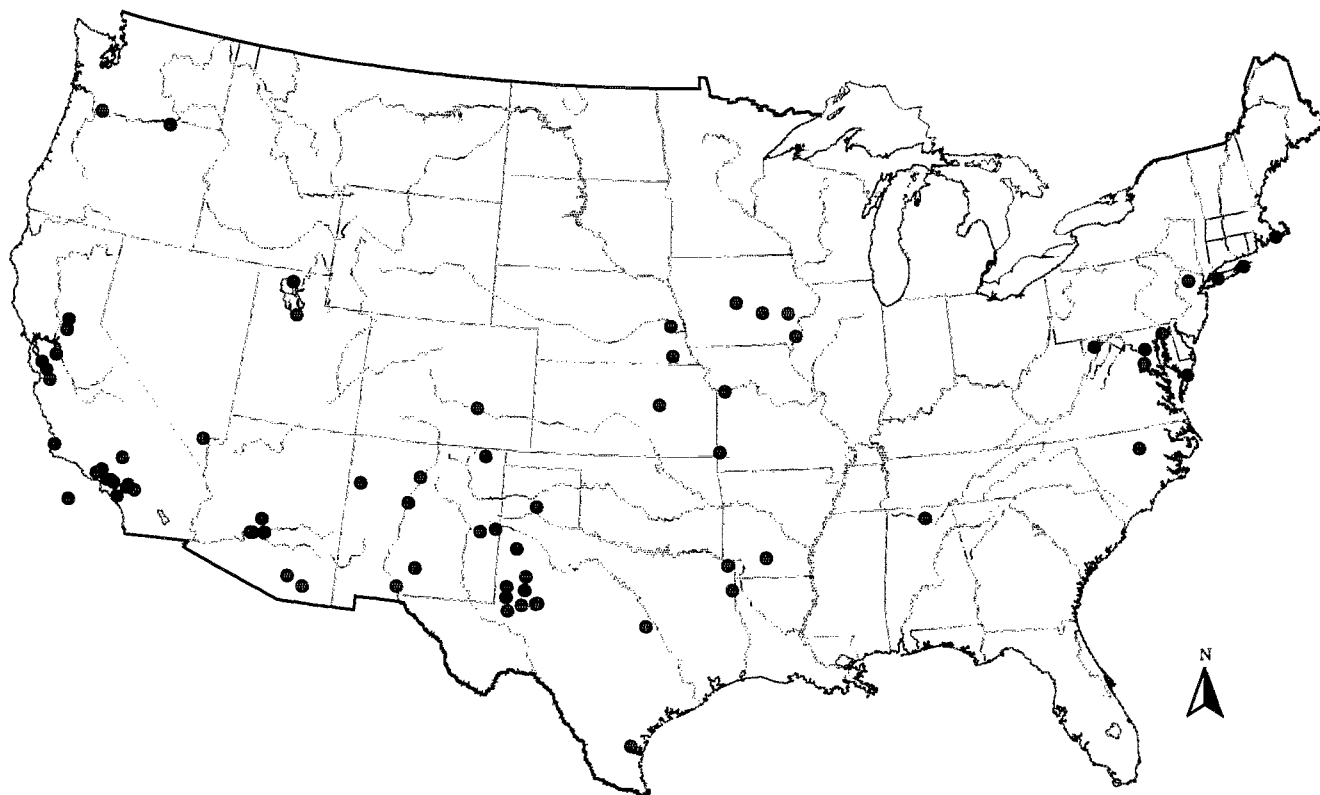
*Las Vegas Wash Gravels - travel time is 4 months; flushing time is 4 to 24 months (1 to 6 travel times)

Kerr McGee Perchlorate Groundwater Remediation System Henderson, Nevada





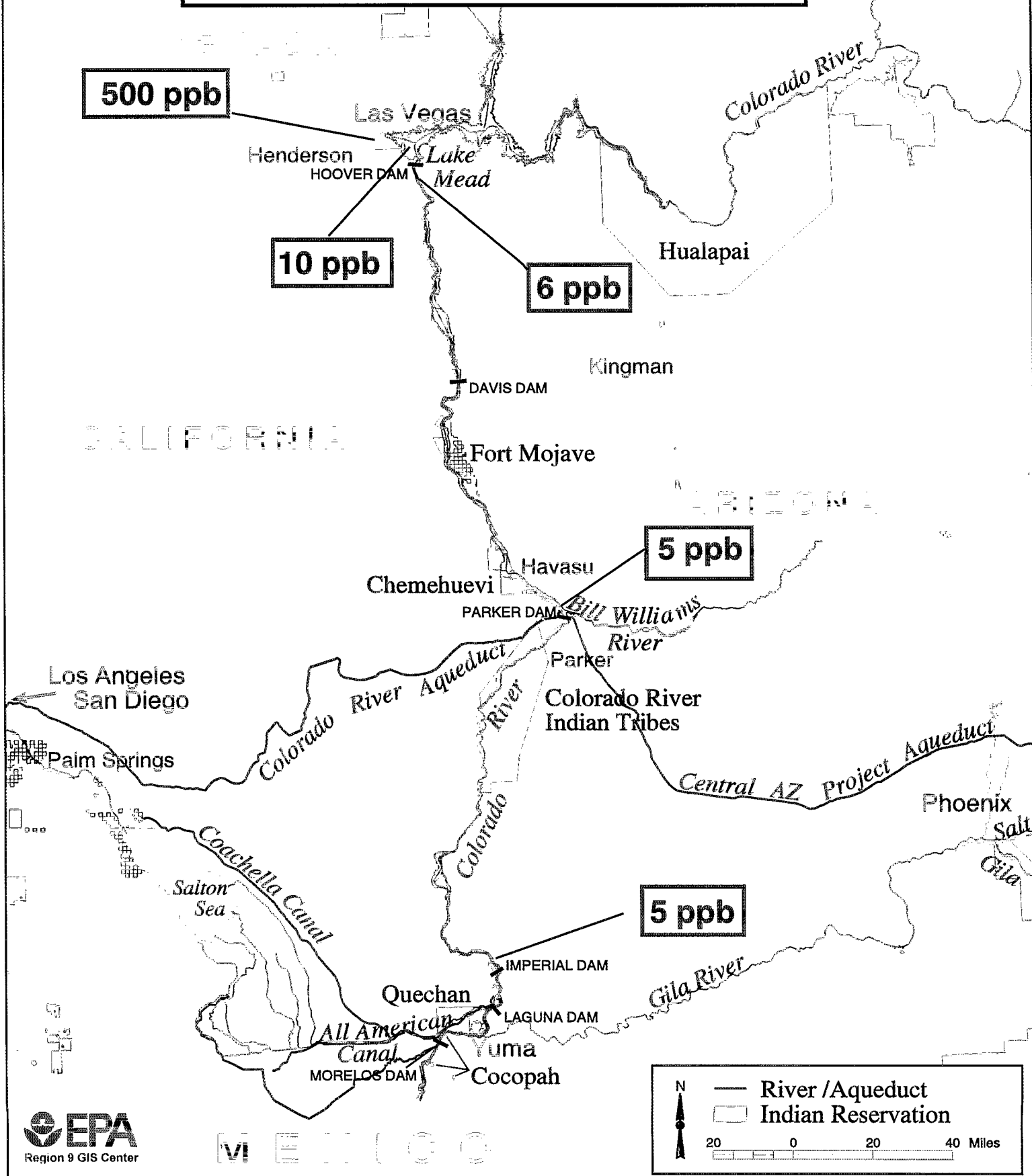
U.S. Perchlorate Manufacturers and Users, as of December 2002



Reported Releases of Perchlorate into the Environment, as of December 2002

Lower Colorado River

2002 Average Perchlorate Concentrations



Q

Vicky —

Karin
1/6/03

Thanks for the fact sheets.

These are handouts given to Sen. Feinstein
on Dec 19, 2002. with the fact sheet.